**Amendments to the Specification**

Please replace the paragraph at the bottom of page 22 with the following amended paragraph:

- - A solution of 0.025 g of Hypol PreMa G-50 was prepared in 0.15 g acetonitrile. Next, a solution of 1 mg DNA (0.3 μm), having hexaneamine at its 5' end and having the sequence $NH_2(CH_2)_6$-CATTGCTCAAAC-3' (SEQ ID No:1), in 0.32 g of a 50 mM $NaHCO_3$ aqueous buffer at pH 8.0 was prepared. The DNA solution was added to the prepolymer solution and thoroughly mixed. Droplets of the resulting solution were manually spotted on a silanated glass slide using a capillary microtube. As a negative control, hydrogel droplets containing no DNA were spotted next to the DNA-containing hydrogel droplets. - -

Please replace the paragraph at the top of page 23 with the following amended paragraph: - - The glass slide, having the hydrogel droplets thereon, was submersed into washing buffer (10 mM sodium phosphate buffer with 0.5 M NaCl and 0.1% SDS at pH 7.0) for 30 minutes to remove organic solvents and block the remaining active sites to prevent non-specific binding of test DNA. Next, the slide was treated with 1 mg of a complementary fluorescence-labeled DNA, 3'-TAGTAACGAGTTTGCC-5'-Fluorescein (SEQ ID NO:2), in 600 μL hybridization buffer (10 mM sodium phosphate buffer with 0.5 M NaCl and 0.1% SDS at pH 7.0) at room temperature, for 1 hour. Non-specifically bound DNA was removed by washing for two hours in washing buffer. The slide was observed with a hand-held fluorescence detector (Model UVGL-25, UVP). The complementary, test DNA diffused into the hydrogel microdroplet and hybridized to the gel-bound DNA probe sequence resulting in a strong fluorescent signal, but it was washed away from the negative control droplet, demonstrating the reliability and usefulness of the present hydrogel biochips in DNA

hybridization assays.- -

Please replace the two paragraphs at the top of page 24 with the amended two paragraphs which follow:

- - To validate the performance of these biochips which carry DNA probes, the following twenty 12-mer oligonucleotides, derivatized with primary amine at the respective 5' end using standard amidite chemistry, were immobilized on separate hydrogel cells as a part of a biochip made in this manner:

| | | |
|---|---|---|
| G1 | 5'-CCTAAGTTCATC-3' | (SEQ ID NO:3) |
| G2 | 5'-TATCTCTTATAG-3' | (SEQ ID NO:4) |
| G3 | 5'-CTATCGTACTGA-3' | (SEQ ID NO:5) |
| G4 | 5'-TTCCTTCACGAG-3' | (SEQ ID NO:6) |
| G5 | 5'-ATTATTCCACGG-3' | (SEQ ID NO:7) |
| G6 | 5'-ATCTCCGAACTA-3' | (SEQ ID NO:8) |
| G7 | 5'-CCTTATTATGCA-3' | (SEQ ID NO:9) |
| G8 | 5'-ACGCTTCCTCAG-3' | (SEQ ID NO:10) |
| G9 | 5'-GACTTCCATCGG-3' | (SEQ ID NO:11) |
| G10 | 5'-CGTACCTTGTAA-3' | (SEQ ID NO:12) |
| G11 | 5'-CTAAACCTCCAA-3' | (SEQ ID NO:13) |
| G12 | 5'-CTAGCTATCTGG-3' | (SEQ ID NO:14) |
| G13 | 5'-TAATTCCATTGC-3' | (SEQ ID NO:15) |
| G14 | 5'-ATTCCGATCCAG-3' | (SEQ ID NO:16) |
| G15 | 5'-TTAGTTATTCGA-3' | (SEQ ID NO:17) |
| G16 | 5'-AAGTTCATCTCC-3' | (SEQ ID NO:18) |

| | | |
|---|---|---|
| G17 | 5'-TTCATCTCCGAA-3' | (SEQ ID NO:19) |
| G18 | 5'-CCGAACTAAACC-3' | (SEQ ID NO:20) |
| G19 | 5'-AACTAAACCTCC-3' | (SEQ ID NO:21) |
| G20 | 5'-CTAAACGTCCAA-3' | (SEQ ID NO:22) |
| G21 | Blank hydrogel | |

A target 30-mer DNA sample from the sequence of the human β-globin gene was synthesized and labeled with a tagging molecule, i.e. fluorescein, at its 5' end using standard amidite chemistry. The sequence of this target sample is the following:

5'-(Fluorescein)-TTGGAGGTTTAGTTCGGAGATGAACTTAGG-3' (SEQ ID NO:23)- -

Please replace the paragraph at the bottom of page 28 with the following paragraph:

- - In this example, an estrogen receptor (ER), a 53 kD protein, binds as a homodimer to its consensus estrogen response element (ERE). The wild-type ERE sequence differs from the mutant sequence by four nucleotides in a region known to be critical for binding by the receptor. The wild-type sequence is a 32-base oligomer with the sequence 5'-tttacggtagaggtcactgtgacctctacccg-3' (SEQ ID NO:24). The mutant sequence differs by four oligonucleotides (underlined) and has the sequence 5'-tttacggtagaggtcactgtatggtctacccg-3' (SEQ ID NO:25). To produce dsDNA for printing, 5 µl of a 650 µM stock of each of the amine-linked oligonucleotide of interest and its complementary oligonucleotide are diluted 1:650 (65 µM final concentration) in 40 µl DNA hybridization buffer, pH 8 (3xSSC, 5 mM $MgCl_2$) for a final reaction volume of 50 µl. The reaction product is incubated at 95°C for 10 min and then chilled on ice for 3 min. Ten microliters of this double-stranded DNA is printed within 450 µm hydrogel spots using a solution consisting of 3.75% polymer, 0.5%

glycerol and 50 mM sodium borate buffer, pH 8.0. Following 1 hour of blocking with a 1% BSA in PBST solution, 1 µl of transcription factor in the form of ER concentration 1.153 µM was diluted in appropriate binding buffer (10% glycerol, 10 mM HEPES, 30 mM KC1, 0.1 mM EDTA, 0.25 mM DTT, 1 mM $Na_2HPO_4$, pH 7.9) and allowed to bind to the dsDNA for 1 hour at room temperature; a 10-min wash with PBST then followed. The ER-ERE complex was next incubated with a 1:100 dilution of a rabbit anti-ERβ antibody for 1 hour at RT, followed by a 30-min wash with PBST. This was followed by incubation with a 1:1000 dilution of goat anti-rabbit IgG-Cy3 conjugate for 1 hour at RT, followed by a 30-min PBST wash. The overall experiment is diagrammatically depicted in FIG. 5. The slide was rinsed with $dH_2O$ and air dried before imaging with a ScanArray Lite scanner. Signal analysis was performed using ArrayPro 4.0 software. An increased signal observed from spots containing the wild-type sequence as compared to the mutant sequence signal, which resembles the control, indicates the retention of linking specificity by the estrogen receptor for its target sequence in the hydrogel matrix.- -

Please replace Table B which appears at the top of page 32, with the following replacement Table:

**Table B**

| No. | Substrate | Amino Acid Sequence | SEQ ID NO. |
|---|---|---|---|
| 1 | insulin receptor fragment | NH-thr-arg-asn-ile-pTyr-gln-thr-asn-tyr-tyr-arg-lys-OH | 26 |
| 2 | PTP Substrate II | NH-asp-ala-asp-glu-PTyr-leu-ile-pro-gln-gln-gly-OH | 27 |
| 3 | PTP Substrate I | NH-glu-asn-asp-pTyr-leu-ile-asn–ala-ser-leu-OH | 28 |
| 4 | insulin receptor fragment | NH-thr-arg-asn-ile-tyr-gln-thr-asn-tyr-tyr-arg-lys-OH | 29 |
| 5 | pp60 c-src (521-533) | NH-thr-ser-thr-gly-pro-gln-tyr-gln-pro-gly-glu-asn-leu-OH | 30 |
| 6 | pp60 c-src (521-533) (phosphorylated) | NH-thr-ser-thr-glu-pro-gln-pTyr-gln-pro-gly-gly-asn-leu-OH | 31 |
| 7 | PDGF receptor substrate | NH-ser-val-leu-pTyr-thr-ala-val-gln-pro-asn-glu-OH | 32 |